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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,907

06/27/2005

Nobuo Ando

03702/0203076-US0

3398

7278

7590

09/15/2009

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EXAMINER

CANTELMO, GREGG

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

09/15/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,907	Applicant(s) ANDO ET AL.	
	Examiner Gregg Cantelmo	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 MAY 2009 AND 22 JULY 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 14-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>18 MAY 2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In response to the amendment received July 22, 2009:
 - a. Claims 1-18 are pending with claims 14-18 withdrawn from consideration as to non-elected invention.
 - b. The objections to the specification have been withdrawn in light of the amendment;

The prior art rejections of record have been withdrawn in light of the amendment.

Election/Restrictions

2. Applicant's election with traverse of Group I, claims 1-14 in the reply filed on July 22, 2009 is acknowledged. This is not found persuasive because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse in this particular response (MPEP § 818.03(a)).

The restriction stands as set forth in the previous office actions and in response to those prior arguments presented by Applicant.

The requirement is still deemed proper and is therefore made FINAL.

This application contains claims 14-18 drawn to an invention nonelected with traverse in the reply filed on July 22, 2009. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Information Disclosure Statement

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3. The information disclosure statement filed May 18, 2009 has been placed in the application file and the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 7-8 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2002-324585 (Murai).

Mura discloses of an electrical storage device with an outer container 2 comprising: a positive electrode, a negative electrode, a lithium electrode 11 and an electrolyte capable of transferring lithium ions, wherein the lithium electrode 11 is arranged to be out of direct contact with the negative electrode and/or the positive electrode, a positive electrode terminal 4 is provided on the positive electrode, a negative electrode terminal 5 is provided on the negative electrode, and a lithium electrode terminal 7 is provided on the lithium electrode, the positive electrode terminal 4, the negative electrode terminal 5 and the lithium electrode terminal 7 include portions located at an outer portion outside the container 2 of the electrical storage device, and wherein lithium ions can be supplied to the negative electrode by flowing current between the lithium electrode and the negative electrode through an external circuit 14 which connects the lithium electrode terminal with the negative electrode terminal

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and/or the positive electrode terminal outside the container (Figs. 1-3 as applied to claim 1).

The electrolyte is an aprotic organic solvent solution in a lithium salt (paras. 4 and 38 as applied to claim 2).

The cell can be a variety of configurations including wound or stacked (para. 37 as applied to claim 7).

The cell is a rolled stack 1 (Fig. 1 as applied to claim 8).

The battery is inherently used to power an electronic device (as applied to claim 13).

Claim Rejections - 35 USC § 103

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murai as applied to claim 1 above, and further in view of U.S. Patent No. 6,461,769 (Ando '168).

The difference not yet discussed is of the electrodes having pores in the current collectors.

Ando '168 discloses configuring the current collectors to have pores therein (see col. 2, ll. 47-61 and paragraph bridging columns 6 and 7).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Murai by forming pores in the current collectors as taught by Ando '769 since it would have provided a configuration which enables free transfer of lithium ions within the cell.

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6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murai as applied to claim 1 above, and further in view of U.S. Patent No. 6,653,018 (Takahashi) or U.S. Patent No. 6,576,365 (Meitav).

The difference not yet discussed is of the housing being a laminate structure.

Laminate housings for lithium-based electrical storage devices are extremely well noted in the art as shown by Takahashi or Meitav (col. 4, ll. 27-37).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Murai by encasing the electric storage device in a laminate housing since such configurations are notoriously well known in the art and can provide a casing having sufficient moldability, heat-resistance, insulation, mechanical strength and sealability. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

7. Claims 1-2, 4, 6-10 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,862,168 (Ando) in view of Murai.

Ando discloses a electrical storage device comprising: a positive electrode 1, a negative electrode 2, a lithium electrode 4 and an electrolyte capable of transferring lithium ions, wherein the lithium electrode 4 is arranged on an end with the negative electrode 2 (Fig. 1) and wherein lithium ions can be supplied to the negative electrode and/or the positive electrode by flowing current between the lithium electrode and the

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negative electrode and/or the positive electrode through an external circuit which connects the lithium electrode terminal with the negative electrode terminal and/or the positive electrode terminal. A positive electrode terminal is provided on the positive electrode, a negative electrode terminal is provided on the negative electrode, and a lithium electrode terminal is provided on the lithium electrode, the positive electrode terminal, the negative electrode terminal and the lithium electrode terminal include portions located at an outer portion of the electrical storage device (Fig. 6 as applied to claim 1).

The electrolyte is an aprotic organic solvent solution of a lithium salt (abstract as applied to claim 2).

The lithium current collector is porous and has lithium deposited in the pores (col. 15, ll. 6-12 as applied to claim 4).

The bottom of the lithium electrode as shown in Figs. 3 and 5 is designed such that it faces the top portion of the positive and negative electrodes (as applied to claim 6).

The electrodes can be stacked in multiple layers as shown in Fig. 1 (as applied to claim 7) or can be rolled (Figs. 4-6 as applied to claim 8).

The device is a capacitor (abstract as applied to claim 9).

The electrodes are selected materials which reversibly carry lithium ions and/or anions and the electrostatic capacitance per unit weight of the negative electrode to the positive electrodes is at a ration of at least 3:1 (negative electrode to positive electrode)

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with the positive electrode having a larger weight than the negative electrode (see table 8 as applied to claim 10).

Regarding claim 12, claim 12 is held to define an operational condition applied to the device. It does not clearly further define the product apart from that disclosed in Ando and fails to define the conditions for supplying the lithium ions. Since the prior art apparatus is capable of supplying lithium ions to the electric storage device, the prior art is inherently capable having some amount of lithium remaining after lithium is supplied, depending on the conditions for supplying (as applied to claim 12).

The device is used in an electronic apparatus and thus teaches of the combination as recited in claim 13.

Ando does not teach of the lithium electrode being arranged to be out of direct contact with the negative electrode (claim 1) or of portions of the terminals located outside the container (claim 1).

Regarding the lithium electrode being arranged to be out of direct contact with the negative electrode:

Murai teaches of a lithium ion cell wherein an auxiliary source of lithium is provided in the cell but is kept out of direct contact with the positive and negative electrodes (abstract and Figs. 1-3). Murai teaches that it is desired to keep the lithium metal out of direct contact with the electrodes or the electrolyte (abstract). This obviously prevents the formation of reaction products between the electrodes and electrolyte and the highly reactive lithium metal.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by physically isolating the lithium metal source as suggested by Murai since it would have prevented for formation of a reaction compound between the anode and the highly reactive supplemental lithium and would have improved the capacity of the electrochemical device (para. 12).

In providing a configuration taught by Murai wherein a lithium supplemental source is provided in the lithium electrochemical device but not in contact with the electrodes or electrolyte inside the cell, it would further have been obvious then to provide terminals for all of the electrodes to include portions which are located outside of the container as taught by Murai in order to effectively provide the necessary supplemental lithium from the supplemental electrode 11 to the electrochemical electrodes of the lithium electrochemical device.

8. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando in view of Murai as applied to claim 10 above, and further in view of U.S. Patent No. 6,461,769 (Ando '769).

The differences not yet discussed are of the electrodes having pores in the current collectors (claim 3) or of the negative electrode material being an insoluble and infusible base having a polyacene-based structure with a H/C ratio of 0.50 to 0.05.

Regarding the formation of pores in the current collectors (claim 3):

Ando '769 discloses configuring the current collectors to have pores therein (see col. 2, ll. 47-61 and paragraph bridging columns 6 and 7).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by forming pores in the current collectors as taught by Ando '769 since it would have provided a configuration which enables free transfer of lithium ions within the cell.

Regarding the negative electrode material of claim 11:

Ando '769 further teaches that such a material is an art-recognized negative electrode material in lithium ion devices (see col. 1, ll. 47-65 and col. 3, ll. 42-51).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by modifying the negative electrode active material to that taught in Ando '769 since such materials are art-recognized materials for reversibly carrying lithium and since the particular material of Ando '769 can reversibly carry a greater amount of lithium and thus has a higher lithium capacity as compared to other materials. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ando in view of Murai as applied to claim 1 above, and further in view of U.S. Patent No. 6,653,018 (Takahashi) or U.S. Patent No. 6,576,365 (Meitav).

The difference not yet discussed is of the housing being a laminate structure.

Laminate housings for lithium-based electrical storage devices are extremely well noted in the art as shown by Takahashi or Meitav (col. 4, ll. 27-37).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by encasing the electric storage device in a laminate housing since such configurations are notoriously well known in the art and can provide a casing having sufficient moldability, heat-resistance, insulation, mechanical strength and sealability. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

10. Claims 1-4 and 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. Ando '769 in view of JP 08-190934 (Honbou) or Murai.

Ando discloses a electrical storage device comprising: a positive electrode 1, a negative electrode 2, a lithium electrode 4 and an electrolyte capable of transferring lithium ions, wherein the lithium electrode 4 is arranged on an end with the negative electrode 2 (Fig. 1) and wherein lithium ions can be supplied to the negative electrode and/or the positive electrode by flowing current between the lithium electrode and the negative electrode and/or the positive electrode through an external circuit which connects the lithium electrode terminal with the negative electrode terminal and/or the positive electrode terminal. A positive electrode terminal is provided on the positive electrode, a negative electrode terminal is provided on the negative electrode, and a

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lithium electrode terminal is provided on the lithium electrode, the positive electrode terminal, the negative electrode terminal include portions located at an outer portion of the electrical storage device (Fig. 1 as applied to claim 1).

The electrolyte is an aprotic organic solvent solution of a lithium salt (abstract as applied to claim 2).

Ando '769 discloses configuring the current collectors to have pores therein (see col. 2, ll. 47-61 and paragraph bridging columns 6 and 7 as applied to claim 3).

The lithium current collector is porous mesh or expanded metal and thus has pores (col. 9, ll. 10-20 as applied to claim 4).

The lithium electrode faces the negative electrode (see Figs. as applied to claim 6).

The electrodes can be stacked in multiple layers as shown in Fig. 1 (as applied to claim 7) or can be rolled (Figs. 7-8 as applied to claim 8).

The device is a capacitor (abstract as applied to claim 9).

Ando '769 further teaches that such a material is an art-recognized negative electrode material in lithium ion devices (see col. 1, ll. 47-65 and col. 3, ll. 42-51 as applied to claim 11).

Regarding claim 12, claim 12 is held to define an operational condition applied to the device. It does not clearly further define the product apart from that disclosed in Ando and fails to define the conditions for supplying the lithium ions. Since the prior art apparatus is capable of supplying lithium ions to the electric storage device, the prior art

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is inherently capable having some amount of lithium remaining after lithium is supplied, depending on the conditions for supplying (as applied to claim 12).

The device is used in an electronic apparatus and thus teaches of the combination as recited in claim 13.

Ando '769 does not teach of portions of the terminals located outside the container (claim 1).

Regarding portions of the terminals being located outside of the container:

The concept of disposing the terminals outside a lithium cell is known in the art as shown by Honbou. The electrode terminals 34, 35 and the lithium terminal 36 are connected to an external circuit. Murai also teaches that the electrode terminals and lithium electrode can be designed such that the terminals extend to the outside of the lithium electrochemical device whereby the circuit for connecting the lithium electrode to the positive or negative electrodes of the cell. Such a configuration would have been readily obvious in light of the combination of teachings from the prior art and would have required only routine experimentation from one of ordinary skill in the art.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ando '769 in view of either Honbou or Murai as applied to claim 1 above, and further in view of U.S. Patent No. 6,653,018 (Takahashi) or U.S. Patent No. 6,576,365 (Meitav).

The difference not yet discussed is of the housing being a laminate structure.

Laminate housings for lithium-based electrical storage devices are extremely well noted in the art as shown by Takahashi or Meitav (col. 4, ll. 27-37).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando '769 by encasing the electric storage device in a laminate housing since such configurations are notoriously well known in the art and can provide a casing having sufficient moldability, heat-resistance, insulation, mechanical strength and sealability. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

Response to Arguments

12. Applicant's arguments with respect to claims 1-13 are have been considered but are moot in view of the new ground(s) of rejection.

The amendment to the claims now reciting the electrode terminals having portions located outside of the outer container required the new grounds of rejection presented above and such claim amendment is not held to render the claimed invention patentable over the prior art rejections of record and the teachings of the references relied upon in the present prior art rejections of record.

The concept of disposing the positive, negative and lithium electrodes such that their respective terminals include portions which extend outside of the electrochemical device container is not a novel contribution to the art as shown by Murai and Honbou.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregg Cantelmo/
Primary Examiner, Art Unit 1795